CLAIMS

I claim:

1. An enhanced capacity communication system comprising:

a sending device for delivering a data signal via a communication link to a receiving device,

the sending device comprising:

a data signal framer that receives the data signal;

a transmit clock pulse signal; and

a phase modulator that receives an additional data signal and the transmit clock pulse signal, the phase modulator provides a sinusoidal jitter modulation that phase modulates the clock pulse signal by introducing intentional jitter at clock pulse transitions responsive to the additional data signal, the additional data signal thereby modulates the transmit clock pulse signal to provide a phase modulated transmit clock pulse signal that is delivered to the framer for inclusion with the data signal to create a combined data signal and additional data signal that is transmitted via the communication link to the receiving device for decoding and further use.

2. The communication system of claim 1 wherein the sinusoidal jitter modulation has selectable jitter frequencies each having a given amplitude, the additional data signal having additional data encoded in a select format to cause the phase modulator to select one of the jitter frequencies of a given amplitude.

3. The communication system of claim 2 wherein the selected jitter frequencies of the sinusoidal jitter modulation are different and the amplitudes are the same.

4. The communications system of claim 2 wherein the selected jitter frequencies of the sinusoidal jitter modulation are the same and the amplitudes are different.

5. The communications system of claim 2 wherein the selective jitter frequencies of the sinusoidal jitter modulation are different and the amplitudes are different.

6. An enhanced capacity communication system comprising:

a sending device for delivering a data signal via a communication link to a receiving device, the sending device comprising:

a data signal framer that receives the data signal;

a transmit clock pulse signal; and

a phase modulator that receives an additional data signal and the transmit clock pulse signal, the phase modulator provides a sinusoidal jitter modulation that phase modulates the clock pulse signal by introducing intentional jitter at clock pulse transitions, the sinusoidal jitter modulation having selectable jitter frequencies each having a given amplitude, the additional data signal having additional data encoded in a format of binary ones and zeros, such that the appearance of a binary one in the additional data signal causes the phase modulator to select one of the jitter frequencies of a given amplitude, whereas the appearance of a binary zero causes the phase modulator to select another frequency of a given amplitude, the additional data signal thereby modulates the transmit clock pulse signal to provide a phase modulated transmit clock pulse signal that is delivered to the framer for inclusion with the data signal to create a combined data signal and additional data signal that is transmitted via the communication link to the receiving device for decoding and further use.

7. The communication system of claim 6 wherein the selected jitter frequencies of the sinusoidal jitter modulation are different and the amplitudes are the same.

8. The communications system of claim 6 wherein the selected jitter frequencies of the sinusoidal jitter modulation are the same and the amplitudes are different.

9. The communications system of claim 6 wherein the selective jitter frequencies of the sinusoidal jitter modulation are different and the amplitudes are different.

10. The communication system of claim 6 wherein the receiving device that decodes the combined data signal and the additional data signal for further use, further comprises:

a receive framer, and

a phase detector, the receive framer receives via the communication link the combined data signal and additional data signal, the receive framer provides a pair of output signals one of which is the same as the data signal, the other of which is delivered to the phase detector and is a phased modulated clock pulse that is identical to the phased modulated transmit clock pulse signal of the sending device, the phase detector processes the phase modulated transmit clock pulse signal and extracts the additional data encoded in the phase

modulated transmit clock pulse signal and provides the additional data output signal for further use.

11. The communication system of claim 6 wherein the communication link comprises a T1 data link.

12. A system for encoding data on a clock pulse signal by phase modulating the clock pulse signal of a sending device, the system comprising:

the sending device having a phase modulator that receives a clock pulse signal and a data encoded signal, the sending device provides a phase modulated clock pulse signal that includes the data on the data encoded signal,

the phase modulator introduces sinusoidal jitter to the clock pulse signal by selectively introducing intentional jitter at the clock pulse transitions, wherein the sinusoidal jitter has selectable jitter frequencies each having a given amplitude, and

the data encoded signal having encoded format of binary ones and zeros, such that the appearance of the binary one in the data encoded signal causes the phase modulation of the clock pulse signal by the selection of one of the jitter frequencies of a given amplitude and the appearance of a binary zero causes selection of another frequency of given amplitude to thereby modulate the clock pulse signal and provide the phase modulated clock pulse signal that includes the data on the data encoded signal.

13. The system of claim 12 wherein the selected jitter frequencies of the sinusoidal jitter modulation are different and the amplitudes are the same.

14. The system of claim 12 wherein the selected jitter frequencies of the sinusoidal jitter modulation are the same and the amplitudes are different.

15. The system of claim 12 wherein the selected jitter frequencies of the sinusoidal jitter modulation are different and the amplitudes are different.

16. A method of encoding data on a clock pulse signal by phase modulating the clock pulse signal comprising:

introducing sinusoidal jitter modulation to the clock pulse signal by selectively introducing intentional jitter at clock pulse transitions, wherein the sinusoidal jitter has selectable jitter frequencies each having a given amplitude;

providing a data signal having a select encoded format; and

selecting one of the jitter frequencies of a given amplitude, to thereby modulate the clock pulse signal to provide a phase modulated clock pulse signal that includes the encoded data.

17. The method of claim 16 wherein the selectable jitter frequencies comprise frequencies that are different with amplitudes that are the same.

18. The method of claim 16 wherein the selectable jitter frequencies comprise frequencies that are the same with amplitudes that are different.

19. The method of claim 16 wherein the selectable jitter frequencies comprise frequencies that are different and amplitudes that are different.

20. A method of encoding data on a clock pulse signal by phase modulating the clock pulse signal comprising:

introducing sinusoidal jitter modulation to the clock pulse signal by selectively introducing intentional jitter at clock pulse transitions, wherein the sinusoidal jitter has selectable jitter frequencies each having a given amplitude, and

providing a data signal having an encoded format of binary ones and zeros, such that the appearance of a binary one in the data signal causes the phase modulation of the clock pulse signal by the selection of one of the jitter frequencies of a given amplitude, and the appearance of a binary zero causes selection of another frequency of given amplitude to thereby modulate the clock pulse signal to provide a phase modulated clock pulse signal that includes the encoded data.

21. The method of claim 20 wherein the selectable jitter frequencies comprise frequencies that are the same with amplitudes that are different.

22. The method of claim 20 wherein the selectable jitter frequencies comprise frequencies that are the same with amplitudes that are different.

23. The method of claim 20 wherein the selectable jitter frequencies comprise frequencies that are different and amplitudes that are different.